



# NUIM OFFICE OF COMMERCIALISATION

CONNECTING EXPERTISE AND INDUSTRY

NATIONAL UNIVERSITY OF IRELAND MAYNOOTH, MAYNOOTH, CO KILDARE IRELAND

Online Quarterly Vol. 3 No. 3 April 2010

Welcome to the latest edition of the information sharing newsletter from the NUI Maynooth Commercialisation Office. Our goal is to share the latest news and activities on the commercialisation of NUIM research. We hope you enjoy the newsletter and find it informative. Comments or questions to [commercialisation@nuim.ie](mailto:commercialisation@nuim.ie).

## STUDENT ENTREPRENEUR COMPETITION WINNER



Above: Student Entrepreneur Competition winner, Fintan Lalor.

The final of the NUIM Student Entrepreneur competition took place on Wednesday 14th April, kindly sponsored by Bank of Ireland Maynooth and McCann FitzGerald Solicitors. Nineteen competitors from both the undergraduate and postgraduate programmes at NUIM took part in a tough three round battle, during which the students were coached in pitching techniques, communication and business skills.

A variety of business ideas were presented across the spectrum of the university's departments, making it difficult for the friendly dragons to choose the winners: Owen Lavery of the NUIM Commercialisation Office, who runs the competition, advised them to use viability as the fundamental principle for assessing the ideas, i.e. how well did the competitors understand their business challenge and market segment.

The Finalists and overall winners were:

- **1<sup>st</sup> place: Bespoke Mobile Suits** - presented by Fintan Lalor. (Prize €6K)
- **2<sup>nd</sup> place: MSsolutions** – presented by Eileen Clifford, Ursula Carragher and John Doyle. (Prize €3K)
- **Joint 3<sup>rd</sup> place: DealCube** – presented by Andrew Thompson and James Dowling. (Prize €500)
- **Joint 3<sup>rd</sup> place ElectR Cycle** – presented by Patrick McElhinney. (Prize €500)

Throughout the competition the Commercialisation Office put special effort into drafting in judges with domain experience to provide maximum advice to the competitors including Ciaran Crean of MicksGarage.com and Ted Lavery of Onlinetradesmen.com. Special thanks to the judges on the final night;

- **Paul Lavery** - McCann FitzGerald Solicitors
- **Christine Flannery** – Branch Manager BOI Maynooth
- **Conor Boyce** - FRKelly Patent and Trade Mark Attorneys
- **Conor Mallaghan** – Carton House Estates

The winning company Bespoke Mobile Suits will provide a mobile tailoring service to busy executives. Fintan Lalor has all the elements of  
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Above: Judges (l-r) Conor Boyce, Christine Flannery, Conor Mallaghan and Paul Lavery

## RESEARCHER SPOTLIGHT: JOHN DOOLEY



Above: John Dooley

Dr. John Dooley is a postdoctoral researcher in the Institute of Microelectronics and Wireless Systems (IMWS) in the Department of Electronic Engineering. His research focus is in the areas of high efficiency power amplifier (PA) design, modelling and predistortion. The primary objective of the research is to address the need for higher efficiency power amplifier designs for future wireless infrastructure e.g. mobile phone basestations.

Base station costs are dominated by the cost of radio frequency (RF) units such as power amplifiers. The size of these and other RF units are often a function of the frequency they operate at. Therefore improvement in the size and power efficiency of these units can not be achieved by incremental advances. Significant improvements will result only through architectural innovation. Changes in the architecture of these systems require certain key technologies which are only now becoming available.

Class S power amplifiers are one example where significant system improvements can be realised. Class S theoretically can offer 100% efficiencies because it uses switch-mode operation. Current class AB PA designs are quite inefficient and as a result are very expensive to run and dissipate a lot of energy as heat. Part of the reason for this is that these PA designs have been tailored for

legacy components and as new components are developed and become commercially available performance enhancements are achieved from new designs. The effort to reach these efficiency levels has been at the expense of other areas of system performance.

In order to counteract the “unwanted side effects” of the new more efficient PA designs, information is extracted about how they affect a base stations performance from measurements of the signal into and out of the PA. From these measurements a model can be extracted for the PA. In theory if we can quantify and describe the behaviour of a particular design then we can design a circuit which has the opposite behaviour. By placing these two circuits in series we can effectively cancel out the “unwanted side effects”.

The Institute of Microelectronics and Wireless Systems in NUI Maynooth has done remarkably well in the RF arena over the last number of years and an important indicator of this is the interest shown by major international companies and academics in the Institutes work. One of these areas of interest is the Class S power amplifier project which Dr Dooley is working on with Gerry Corley, Tomasz Podsiadlik and Dr. Ronan Farrell within the Centre for Telecommunications Value Chain Research (CTVR, [www.ctvr.ie](http://www.ctvr.ie)).

Other areas of research currently undertaken by Dr Dooley include: active antennas, equivalent circuit modelling of RF and microwave frequency components, semi-digital PA design, novel application development for mobile devices and remote wireless sensor network node design.

## STUDENT ENTREPRENEUR COMPETITION WINNER: CONTINUED FROM PREVIOUS PAGE



Above: Competition Finalists (l-r) Eileen Clifford, Ursula Carragher, John Doyle (MSsolutions), James Dowling, Andrew Thomson (Dealcube), Fintan Lalor (Bespoke Mobile Suits) and Patrick McElhinney (ElectR Cycle)

his business in place and will be setting up the company formally after his final exams in May. Of special interest to the Office was the team behind MSsolutions. Based on research by Eileen Clifford and colleagues in the Institute of Immunology who discovered an opportunity for delivering a therapeutic to alleviate the symptoms of Multiple Sclerosis. The therapeutic appears to be effective but until recently no one has been able to figure out how to deliver the agent effectively. We are very excited about the prospects for this treatment (as indeed was one of the dragons who nearly made an investment offer!) which has come out of the Institute of Immunology in NUIM. The promoters of Dealcube demonstrated technology they have developed for allowing wholesalers, who do not have the time/ resources to sell online, to effectively do so. They are currently trading and have demonstrated a solid income in their first foray. Patrick McElhinney made an excellent pitch for his import business for electric mopeds which he sourced while on work experience in China.

The first competition winner in 2008 [www.modernlanguagecentre.ie](http://www.modernlanguagecentre.ie) now employ 19 people, so it is everyone’s hope that the competition can have a real input in creating new and exciting Irish businesses.

